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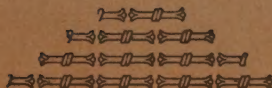
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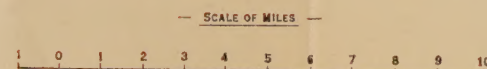
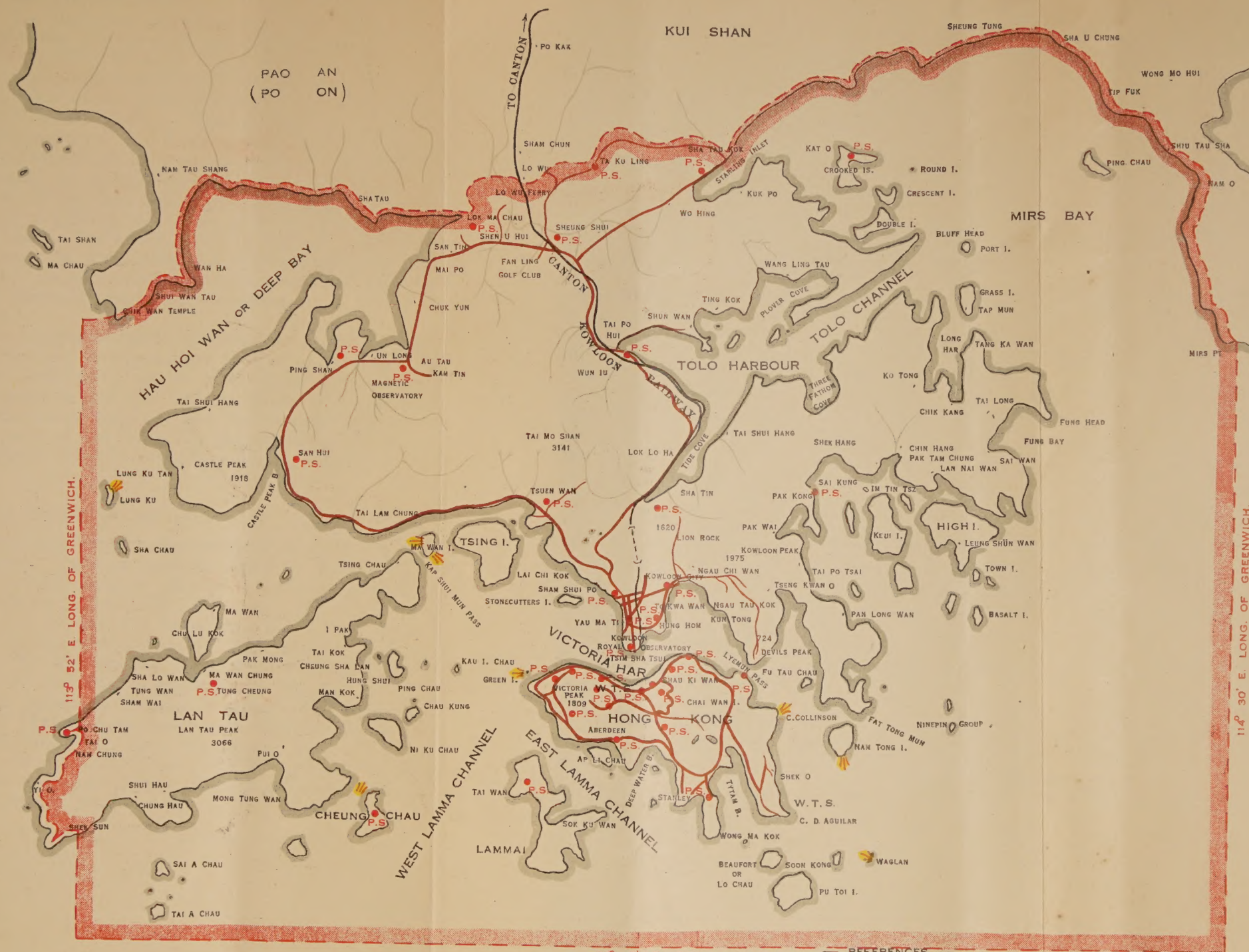
ANNUAL REPORT
OF THE
SUPERINTENDENT,
BOTANICAL
&
FORESTRY DEPARTMENT.
FOR THE YEAR
1938.

Price 60 cents.

PRINTED AT HONG KONG PRISON, STANLEY.



MAP OF HONG KONG AND NEW TERRITORIES.



REFERENCES	
MAIN ROADS	—
BRANCH ROADS	—
STREAMS	—
RAILWAY	—
POLICE STATIONS	P.S. ●
NAVIGATION LIGHTS	—
WIRELESS TELEGRAPH STATIONS	W. T. S.
INTERNATIONAL BOUNDARY	—

Appendix N.

REPORT OF THE BOTANICAL AND FORESTRY DEPARTMENT FOR THE YEAR 1938.

INTRODUCTION.

1. The Botanical and Forestry Department was originally constituted in 1872 as the Government Gardens and Tree Planting Department. In 1880 it became the Botanic and Afforestation Department, the Botanical and Afforestation Department in 1881 and finally the Botanical and Forestry Department in 1905. Inevitably, the department has grown and from the time it was entrusted with local afforestation it has made steady progress in producing a forest covering on Hong Kong Island and part of the mainland. Its other activities, botanical, horticultural and agricultural, have generally increased and at the present time it plays an important part in local affairs. It is doubtful if the value of the work performed in the past by this department, has been properly assessed locally. However that may be, it is thought that its value is now recognised and that it will continue to receive proper valuation in the future. Such local factors as, for example, the water shortages of recent years, by themselves should be sufficient evidence of the value of its afforestation and protection activities for without these activities water troubles would have been considerably more acute, not to mention the silting of reservoirs and catchwaters which would have taken place. These facts should be sufficient to emphasise that, in this Colony, developments in water conservation programmes depend a very great deal for their success on subsequent afforestation activities while the results from scenic and amenity points of view need no stressing.

2. At the present time the department retains its composite nature by virtue of the fact that the Colony is small and the department is able to deal with the work connected with its various sections in a manner both efficient and economic. But for these factors it is highly probable that the Colony would have found it necessary to maintain separate departments involving much heavier expenditure. It will be seen in the subsequent pages of this report that departmental activities are increasing and this must of necessity, result in some alteration in organisation and in additional expenditure.

GENERAL REVIEW OF THE YEAR.

3. Activities during the year were considerably influenced by certain changes both in policy and in organisation. To these must be added the results of the changed conditions in South China which seriously affected at least one section of the work of the department namely forest protection. It is thought that the most important development to record is the fact that Government has shown increased interest in matters connected with forestry and agriculture. The following quotation from the Budget Speech of H.E. The Governor (Sir G. A. S. Northcote) delivered in the Council Chamber on the 13th Oct. 1938, is significant of the trend of policy in these matters. "The estimates reflect the intention of extending the area under forests and at the same time of tightening up conservation methods especially in respect of timber stealing. I understand that there has already been a notable decrease in this kind of larceny. The Superintendent of the Botanical and Forestry Department has been instructed to report on the possibilities of agricultural development of the New Territories including the larger islands."

4. These developments considerably affected departmental activities and much time was devoted to matters intimately concerned with both agriculture and forestry. In respect to Agriculture, the investigation foreshadowed by H.E. The Governor was in progress at the end of the year and the complete report was presented in February 1939. Proposals for some re-organisation of the forestry section of the work were approved generally by Government, chief of which were—(i) A rearrangement of the Staff whereby forest protection and field work respectively, receive separate attention. In respect to the former, the staff is domiciled on definite areas and is given territorial responsibility. (ii) The establishment of additional forest reserves on the mainland and (iii) the establishment of a Forest Experimental Station.

5. The re-arrangement of the forest protection staff was put in action in June and has abundantly justified the change. Increased interest has been taken in "leased forest lots" several of them being checked in respect to new planting and removal of timber and brushwood. Experiments were laid down in the forest experimental station in order to obtain data in regard to these lots, *e.g.* what they produce now, what they could be made to produce, silvicultural methods, etc. It was felt that the 81 square miles covered by these lots ought to receive closer attention, especially as recent events had shown the Colony's dependence on outside sources for its supplies of firewood. By proper organisation it should be possible to provide, in a legitimate manner, a great deal more firewood for the local market.

6. Forest protection loomed very large in departmental activities and it was found necessary to employ practically the whole of the forestry staff on this work, to the detriment of other pressing matters. Even so, the planting programme was carried out satisfactorily and with considerable success from a germination point of view. The Sino-Japanese hostilities in South China towards the end of the year, brought on a spate of forestry offences but practically all of these were of a petty nature. It may be stated that illicit operations on any large scale have practically ceased so far as Crown plantations are concerned but considerable denudation of unprotected hillsides by the removal of brushwood and small trees is taking place, which is regrettable from agricultural and erosion points of view.

7. Work in the Botanical and Gardens sections respectively, was carried on as usual. With respect to the former, it is felt that arrangements must be made for further progress in botanical matters. The herbarium and library are valuable assets of the Colony and much greater use should be made of them. It is intended that this section shall receive, in due course, the attention it merits. With respect to the latter, the improvements carried out in the Government House garden deserve special mention. H.E. The Governor and Lady Northcote take keen interest in the garden and their efforts to improve it have met with considerable success.

8. In regard to weather, the year may be described as a dry one from a rainfall point of view. The rainfall at the Botanic Gardens for the year was 57.48 inches in 116 days as against 79.96 inches in 135 days for the previous year. This was about 27 inches below the average. It was distributed as follows—January to March 10.70 inches; April to June 14.35 inches; July to September 26.71 inches; October to December 5.72 inches. The dry period at the end of the year necessitated an unusual amount of watering of shrubs, etc. Typhoon signals were hoisted on three occasions during the year but fortunately gales of moderate intensity only were experienced.

9. It should be noted that there is some alteration in the arrangement of the Annual Report for 1938. The department is a composite one and at present, Forestry accounts for 65-70% of its work. In the circumstances, it was considered that some re-arrangement in the system of recording the various activities would be appropriate, so as to give the largest section the most prominent position. Alterations have also been made in the presentation of the work of the forestry section itself in order to comply with the recommendations of the Secretary of State for the adoption throughout the Colonial Empire of standard forms for the tabulation of forestry statistics in annual departmental reports.

10. Thirteen standard forms have been compiled for this purpose by the Imperial Forestry Institute but, in the present stage of forestry development in Hong Kong, it has not been found practicable to make use of all of them. Forms No: I. II. V. (modified) VI. and X. are adopted in this report and some of the information required by Forms No: IV. XI. XII. and XIII. is embodied in the text of the forestry section, the subject matter of which has been rearranged to follow as far as possible the numerical order of the forms. It is hoped that in the future it will be possible to record more and more of the local forestry activities in this manner and to obtain interesting results from the study of the comparative statistics which will be produced by this system.

FORESTRY.

11. In the Colony of Hong Kong there are no primeval forests. The forest covering of Hong Kong Island is entirely due to afforestation carried out by the department. This work began on a definite basis about the year 1876 but it was not until 1880 that planting on any large scale was undertaken. Thus the oldest plantation is little more than sixty years of age. Afforestation activities on the mainland (apart from roadside tree planting, etc., which commenced in 1899) began with the first plantings in the Kowloon Reservoir area in 1902. It may be stated that exploitation at this stage is not contemplated and in view of the fact that afforestation generally is likely to be concerned with water conservation and erosion problems for many years, the production of forest for timber purposes is likely to remain subsidiary to the chief aim. Such extraction as takes place is in the nature of forest sanitation, thinnings, etc.

12. *Area of Forest Land* (Standard Form I)—In the absence of complete statistical data it is estimated that the total afforested area is approximately 22 sq. miles. Of this approx. 18 sq. miles is situated on Hong Kong Island and the remaining 4 sq. miles on the mainland. The Hong Kong areas are continuous, apart from the town area, and provide the island with a forest covering from sea level up to 800 feet. The areas on the mainland are concentrated in four localities.

13. In considering this section mention should be made of the "leased forest lot" system sponsored by Government. These licences came into general operation about 1906 i.e. 8 years after the New Territories were taken over. The aim of the scheme was to ensure fuel supplies to the villagers and at the same time, endeavour to obtain a forest covering on the slopes. In many cases it has resulted in perpetuating the "grazing" rights of the villages and the mixture of forest and "grazing" aims has resulted in a sparse pine tree covering on the lower slopes of the hills, the land being expected to produce both trees and grass. The total area of such lots is 81 square miles which produced \$9192/80 in license fees. The trees produced are generally of a stunted nature due to the local custom of lopping side branches for fuel purposes. When the tree has reached a height of about 12 ft. and is 2-4 inches in diameter (B.H.), which dimensions are reached in about 12-15 years, it is removed for firewood purposes. Similar trees on Government plantations in the same period attain 25 ft. in height and 4-6 inches in diameter (B.H.) with a proportionate crown.

14. *Progress in Forest Reservation* (Standard Form II)—The information given in this form indicates that the matter should receive further attention. Proposals for additional reserves situated on the mainland were submitted to Government during the year and received favourable consideration. The only legally constituted forest reserve (Mount Collinson—area 328 acres) is on Hong Kong Island. The island generally is well wooded and it would be impracticable to constitute more reserves in view of its large population and relatively small area. It is considered better to treat the whole wooded area as a forest reserve on modified lines and to maintain it as protection forest.

15. It is intended to take steps in regard to the afforested areas on the mainland and to this end one of them (Taipo Kau forest reserve—area approx. 577 acres) was in process of survey and demarcation at the end of the year. When preliminaries are completed it will be legally constituted as a forest reserve. This reserve will function as the forest experimental station of the department. It may be stated that increase in forest area in the Colony is at present, almost entirely dependent upon the production and maintenance of forest reserves by this department.

16. *Record of Forest Communications*—These consist entirely of forestry paths. The total length of these during the year under review was 54 miles and they are cleared and repaired annually in conjunction with the fire barriers. There is insufficient information to justify the use of Standard Form IV.

Table I.

FOREST PROTECTION SERVICE: ANALYSIS OF OFFENCES AND LOCALITIES.

Village or District.	Block.	Report of:—						Total.
		Pine tree stealing.	Pine tree branch stealing.	Brushwood stealing.	Wild Flower stealing.	Trespassing in plantations.	Assault on Forest Guard.	
Victoria	1	59	3	128	2	—	—	192
Wongneichong	2	12	1	20	—	—	—	33
Shauiwan	3	20	1	34	—	4	—	59
Tytam	4	—	1	1	—	—	—	2
Stanley	5	—	—	—	—	—	—	—
Aberdeen	6	16	—	10	—	—	—	26
Pokfulam	7	30	—	31	—	4	—	65
Kowloon	8	158*	4	10	—	3	1	176
Harbour Belt	9	114°	16	19	—	5	—	154
Cheungshawan	10	29	6	6	—	—	—	41
Kang Hau	11	—	1	—	—	—	—	1
New Territories	12	71	39	45	1	—	—	157
Total for 1938.....		509	72	304	3	16	1	906
Total for 1937.....		366	19	208	7	15	1	616

* 14 also convicted for trespassing.

° 27 also convicted for trespassing.

17. *Summary of Forest Offences* (Standard Form V). In connection with this section, it has been found necessary to modify the standard form and to retain departmental Table I for purposes of record. The monthly totals of arrests (departmental and police) revealed a sharp decline in number in February with a gradual reduction until September in which month the lowest figure (59) was recorded. This figure was doubled in October and November, while the figure for December rose to 351. The large increase in figures for December was entirely due to two factors (i) interference with the firewood supplies and (ii) the large influx of refugees. Both of these were directly attributable to the Japanese occupation of South China at this period. Cases for the year were—departmental 906, police 1540—Total 2446. This shows a decline of 689 over the previous year. In view of the more difficult conditions prevailing the reduction in cases is very satisfactory. In this connection, it is considered that the re-arrangement of the forest protection Staff from June onwards fully justified itself by the much greater control it was possible to exercise over the Crown forest areas generally.

18. *Progress in Afforestation* (Standard Form VI)—Additional afforestation to the extent of 238 acres was carried out during the year. Of this 127½ acres was on Hong Kong Island and 110½ acres on the mainland. Local afforestation methods consist of (i) sowing *in situ* necessitating the digging of pits and (ii) broadcasting of seed. Both methods are necessary in dealing with the types of area found in the Colony. The total number of pits for *in situ* sowing was 261,834. The amount of seed used in all operations was 3748 lbs. Costs per acre worked out at H.K. \$10/70=13s./4½d. at par. It should be stated that results from the pine seed (*Pinus Massoniana* Lamb.) used for afforestation purposes has been found much more satisfactory when sown direct into the area. Nursery methods have been tried out but have been discarded in favour of present methods. Broad-leaved trees however, have to be dealt with in normal nursery fashion. To date these, for the greater part, have been used only for roadside planting.

19. Areas dealt with were not extensive in themselves the total being made up of numerous areas the largest *in situ* sections of which were (i) Hong Kong—addition to Tsat Tse Mui area 47 acres; to Taikoo Valley area 46 acres; and (ii) Mainland—Beacon Hill 17 acres; Taipo Road (Plantation 9A) 17 acres; Tai Po Kau 16 acres. Broadcast areas consisted for the greater part of burnt sections, the slopes on the sides of new roads and bare areas.

20. Germination was a little variable but much better results were obtained from broadcasts than from pit sowings. This proved to be the case also, in some experiments laid down in the experimental station. However, a few of the broadcasts were poor also and the subject generally is receiving further attention. On the whole germination was very good and results for the year very satisfactory.

21. *Outturn of Fuel*—The outturn from the forest areas was made up for the greater part of dead and damaged timber, being the results of typhoon and insect attacks, and of a small quantity of removals from building sites, etc. It was extracted as logs and transported by lorry to the Stores Department to build up a supply for issue to government departments. This assured supplies for Government and removed a fairly large consumer from the local firewood market. The total timber removed in log form was 2027.59 tons (avoirdupois). This system of measurement was introduced in the latter part of 1937 when the scheme was first put into operation. For firewood purposes it is satisfactory so far as the logs are concerned but is less so where branches and brushwood are concerned. In view of the size of outturn and the fact that it concerns firewood only there is no reason to adopt Standard Form VII.

22. *Imports and Exports of Timber, etc.* (Standard Form X)—Reference to this form shows that imports are large and timber for all purposes is derived entirely from other countries. Exports shown are in fact re-exports. Reference to the imports percentage column indicates that the only British Colony which has a reasonably high percentage of local trade is British North Borneo. Under "Firewood" it is interesting to note that importations from South China amounted

to 52%, so that the position resulting from the cessation of this regular supply can be visualised and the increase in forestry offences during December can be well understood. Statistics for this form were kindly supplied by the Imports and Exports Department.

23. *Revenue and Expenditure*—In view of the composite nature of the department and the fact that some votes serve all sides of the work, it is not possible to give absolutely accurate figures for expenditure on forestry. Therefore, the adoption of standard forms XI and XII at the present stage is not possible. In respect to Expenditure, it is considered more satisfactory to retain departmental Tables III and IV and to add to them an additional column showing the approximate allocations to the forestry section from composite votes as well as votes entirely allocated to it. Table II will be amended similarly to record forestry revenue. In connection with the latter it will be necessary to include the estimated wholesale market value of the timber extracted and passed to the Stores Department. Figures for expenditure for the year indicate that the forestry section absorbed approximately 55.91% of the total expenditure of the department.

24. *Strength of Forest Staff*—The permanent staff of the forestry section is as follows—senior officers 2 (1 part time) intermediate officers 3, foresters 3, forest guards 12, others 35. This staff is augmented by temporary labour as required and the average daily number of temporary employees during the year was 58. The staff generally is not of a sufficiently large or detailed type to necessitate use of Standard Form XIII.

25. *Taipo Kau Forest Reserve*—As has been stated above this reserve is to be the forest experimental station of the department. It has been used in this way in the past to a small extent, but the time has arrived for it to be properly organised as such. To this end the erection of a plant house for seed raising, etc. was approved during the year and consideration given to some necessary drainage of old padi sections to provide suitable experimental plots. However, it was not found possible to make much headway during the year owing to the pressure of other sections of forestry activities and the drainage work had to be postponed. Even so, a beginning was made with various experiments in connection with the local pine (*P. Massoniana* Lamb.) the objective being firstly, to obtain data for comparison purposes of *in situ* sowing and broadcasting experiments and secondly, to obtain data regarding outturn in relation to the 'leased forest lot' system. These experiments are of considerable local interest in their relation to present afforestation practices on the one hand and outturn of firewood from the large area (81 sq. miles) under 'leased forest lots' on the other.

26. *Planting in this reserve* consisted of the following—*Trees*—*Pinus Khasya* Royle 154; *Liquidambar formosana* Hance 497; *Aleurites montana* Wils. 120. *Experimental Plots*—Ten $\frac{1}{2}$ acre plots were laid down in connection with the experiments mentioned in the paragraph above and necessary planting carried out.

27. *Protection of Plantations*—The clearing of all fire barriers and forestry paths was carried out before the commencement of the dry season. The total length of old fire barriers dealt with was $55\frac{3}{4}$ miles and that of forestry paths 54 miles. A new 30' fire barrier was made on Ngan Chau Island in connection with posts used for tests connected with sea navigation.

28. *Forest and Hill Fires*—The number of fires dealt with during the year was 24, one less than in the previous year. There were 19 on Hong Kong Island and 5 on the mainland. The usual distribution of handbills and the posting of warning notices prior to the Ching Ming and Chung Yeung festivals was carried out. The vernacular press kindly gave prominence to notices requesting all visitors to graves and cemeteries to take precautions against damage by fire.

29. *Entomological Notes*—During the year the following insects were collected and identified as attacking *Pinus Massoniana* Lamb.:—*Ips* sp. (Bark borer)—A very severe attack by a member of this bark boring genus was experienced.

Specimens of the beetle were forwarded to the Forest Entomologist, Hawaii, for identification purposes and the species was provisionally identified as *Ips* (*Tomicus*) *proximus* Eich. A collection of specimens made subsequently was forwarded to the Forest Entomological Officer, Dehra Dun and proved to be of beetles secondary to the attack of the *Ips* sp., which were identified as follows:—*Pelicerus* sp., *Crypturgus* sp. nov., *Xyleborus pinicola*, *Laemophloeus* sp. and *Monochamus* sp. Protective measures were adopted as follows, all dead and infested trees were felled, the bark, top wood and brushwood, were burnt on the spot and the timber was removed to the depot. The attack is thought to be connected with the weakening of the trees by the severe typhoons of 1936 and 1937. Cheung Chau Island suffered heavily from the insect attack and it received also the full force of the typhoons.

30. *Dendrolimus punctatus* (Pine Caterpillar).—Attacks by this caterpillar were confined to a small area and were on a small scale. The treatment given in previous years appears to be having a good effect.

31. *Mycological Note*—In the neighbourhood of Kowloon Reservoir, the needles and leading shoots of some of the pine trees (*Pinus Massoniana* Lamb.) frequently exhibit symptoms of an attack by a fungus. Infected needles exhibit a dying back from the apex towards the base. Microscopic examination of the needles shows fungal hyphae in the tissues and a characteristic accumulation of resin in the resin ducts. Affected trees have not been observed to succumb to the attack of bark borers (*Ips* sp. etc.). It is proposed to obtain an identification of this fungus in due course.

32. *Government Fuel Supply*.—This has been mentioned earlier under “Outturn of Fuel.” It is satisfactory to note that the scheme proceeded smoothly during the year and that the outturn was more than required for Government purposes (the latter being 700 tons per annum). At the same time it must be realised that the supply is not inexhaustible and it is advisable that definite arrangements should be made whereby future supplies will be assured. During the next few years, supplies will be provided from systematic cleaning of the forest areas and these may or may not hold out until the areas envisaged for fuel purposes attain suitable dimensions for felling purposes.

33. *Other Activities*—The following matters are subsidiary to the forestry work of the department, but are carried out by the forestry staff.

34. *Miscellaneous Tree Planting*—This concerns planting in connection with roadsides, public playgrounds, Government buildings, etc. Plantings of this nature were as follows:—Hong Kong Island 2908, Mainland 5146, Cheung Chau Island 1210 Total—9264. Species used in this work were the following:—*Acacia confusa* Merr., *Aleurites triloba* Forst., *Bauhinia variegata* L., *Bauhinia Blakeana* Dunn, *Bauhinia purpurea* L., *Cassia fistula* L., *Cassia glauca* Lam., *Callistemon rigidus* R.Br., *Casuarina equisetifolia* L., *Celtis sinensis* Pers., *Cinnamomum Camphora* Nees, *Crataeva religiosa* Forst, *Delonix regia* Rafin, *Liquidambar formosana* Hance, *Melaleuca leucadendron* L., *Sapium discolor* Muell-Arg., *Sapium sebiferum* Roxb., *Sterculia lanceolata* Cav., *Tristania conferta* R.Br..

35. *Brushwood Clearing*—In Hong Kong, Kowloon and the New Territories, areas cleared of brushwood and undergrowth generally totalled 2,680,340 square feet. Other clearings carried out in connection with surveys, building developments and traffic requirements, amounted to 764,970 square feet. This makes a total of 3,445,310 square feet or about 79 acres. This item has sometimes appeared in reports as anti-malarial undergrowth clearing. It is considered that this is a little misleading, as the routine clearings carried out are on crown land and consist for the greater part of the removal of scrub and long grass from open spaces, around buildings, private lots, etc.. Clearing for anti-malarial works such as training of nullahs, etc. is done when requests are received from the departments concerned.

36. *Scenic Development*—As in the previous year, a small special vote was provided for the specific purpose of introducing more colour and neatness into small areas adjacent to tourist routes. This work entails cleaning up and turfing areas, planting flowering shrubs and providing for maintenance of areas dealt with. This latter point may have been overlooked when the scheme was originally put in action. It must be realised that every area added in this way becomes a liability in respect of after care and maintenance. In consequence, planting carried out during 1937 became a charge on the vote for 1938 and part of the latter was used therefore, for this purpose.

37. Areas dealt with during the year were, the lower part of Garden Road and various places in Stubbs Road between Magazine Gap and Victoria Peak. Species used for planting were as follows: *Hydrangea hortensia* Sieb. (466), *Rhododendron Simsii* Planch. (Local Azalea) (376), *Hibiscus* vars. (63), *Bauhinia variegata* L. (70)—Total 975.

38. *Bamboo Scheme*—It must be recorded that the hasty efforts made at the end of 1937 to establish propagating material of one or two species of economic bamboos obtained from Canton, were unsuccessful. Some 75% of the material was planted out in Taipo Kau forest reserve while the remainder was planted at Sheung Shui experimental garden. The work was carried out under the supervision of a trained man from Canton, loaned for the purpose, but results were very poor indeed. It is thought that the material (some 1200 canes) was too young and that the method of packing for transport was unsuitable. To some extent it will retard development of the scheme but this has the virtue of providing a breathing space to organise the matter on sound and practical lines.

39. *Pine Cone Collection*—In view of the changed conditions in South China and the fact that difficulty might be experienced in obtaining pine seed for afforestation purposes, it was decided to collect as much seed as was practicable from the forest areas. Collection was carried out at Taipo Kau forest reserve and in the Fanling plantations while the cones were sun dried and the seed extracted at the Sheung Shui experimental garden. Total was 364 lbs. at a cost of 47.6 cents per pound. The cost was a few cents higher than the contract price for this seed.

HERBARIUM AND LIBRARY.

40. Work in the herbarium consisted for the greater part, of re-numbering and listing the specimens for records purposes. During the year, assistance was given in the collection of the bamboos of the Colony in connection with Dr. McClure's survey. His report will be submitted in due course. Several identifications were made of local species for various people. The specimens of *Alangium* were forwarded on loan to Dr. van Steenis of Buitenzorg, in connection with the revision of this genus by Dr. S. Bloembergen. 547 duplicates were received from the Lingnan University herbarium for incorporation in the general herbarium. There were 13 visitors during the year.

41. The following were added to the library during the year:—11 books, 427 periodicals, 60 annual reports and 339 leaflets. Twelve volumes were bound by the Prisons Department. Provision was made in the Estimates for 1939 for the separation of the library from the herbarium. By this alteration much needed herbarium space will be provided and it will be possible to consult the library volumes in comfort.

GARDENS, PARKS AND GROUNDS.

42. In addition to normal upkeep, considerable work was carried out in some of the areas under the control of the department. These are mentioned separately with a description of the work performed. Places for which the department is responsible and which require normal routine attention only are given in a later paragraph. Other matters dealt with by this section were sale of plants, seed collection and exchange and inspection of plants and plant products for export.

43. *Botanic Gardens*—The chief items dealt with were as follows:—*Old Garden* (a) Reservoir area—a bamboo lattice was erected on the north side and planted up with climbers to provide some privacy for Government House, which had been opened up to view from the Botanic Garden above by tree losses in the typhoons. Two long borders were opened up on the south side and planted up with mixed winter annuals. (b) Eastern section—in connection with the laying of a large water main from the reservoir to the new Garden Road pumping station a quantity of turf had to be removed. On completion of the work the area was re-turfed. *New Garden*—(a) Palm section—the larger of the two areas which make up this section was taken in hand. The two sand pits were removed and the large bare area turfed. The smaller area was retained as a children's playground and one sand pit was constructed on it. (b) Rose border—this border was emptied (the rose plants being moved to another site) and was subsequently planted up with a supply of Cannas obtained from the Botanic Gardens Department, Straits Settlements. The subsequent display of colour attracted considerable attention. For a winter display, the border was planted up in herbaceous border fashion with winter annuals. (c) Bulb border—this border was re-conditioned, *i.e.* drainage was provided, the border was raised above the path level and re-planted.

44. Operations common to both gardens consisted of the following—(a) Replacement of most of the *Ophiopogon* and *Liriope* by turf (b) Planting of miscellaneous trees and shrubs (c) Applications of manure and/or leaf mould to most of the small shrubs. De-worming of lawns was carried out on several occasions by the use of Cha-Chai (Tea Cake).

45. *Government House*—Very considerable alterations and improvements were carried out in this garden. His Excellency the Governor and Lady Northcote being keen gardeners, displayed much interest in the garden and were responsible for much of the work carried out. Chief among the various items were (a) Upper level—the path on the north west side leading to the west entrance was lowered some 4 feet and flights of wide steps constructed at the ends and in conjunction with this the screen of climbers was moved over to block out the servants quarters. The triangular plot of ground immediately inside the west entrance was laid out as a small rose garden with paved paths. (b) Slopes—the slopes down to the lower level received attention of a planting nature, while those in the north west corner of the garden down to the road were cleared of rubbish, turfed generally, narrow paths constructed and the area dealt with generally on the lines of a "wild garden." (c) Lower level—arrangements were made on the north side for the provision of two flower beds separated by a flight of steps leading down to a rockery. At the bottom of the long flight of steps from the upper level the path was continued in a northerly direction to the main lower path. Work of a constructional nature was carried out by the P.W.D.

46. Planting was carried out in several parts of the garden and a good deal of turfing was done. Taken all round the work has produced excellent results and has made the garden very much more attractive. It has brought into the general scheme, the whole of the lower level which appears to have received little attention in past years. General routine work was carried on and a small mowing machine was used for the outlying areas usually cut by scythe.

47. *Queen Mary Hospital*—Some progress was made with the planting up of this garden. It was decided to replace three grass tennis courts with hard courts and work was proceeding on this at the end of the year, under the P.W.D. A plan for the layout of the whole of the garden area was prepared and will be carried out during the current year.

48. *Living Collection of Bamboos*—The site at Little Hong Kong for this collection received its preliminary clearing which consisted of the removal of undergrowth, first by cutting and then stumping. All trees (mostly Camphor) remain and in due course such thinning as is necessary will be carried out. The area was

surveyed by the P.W.D. and a contour plan supplied. It is intended to plan the planting in this area on systematic lines and sections will be allotted to genera in accordance with their size and type.

49. The following gardens, parks, etc., were maintained in good order throughout the year:—*Mountain Lodge; Fan Ling Bungalow; Colonial Secretary's Residence; The Eyrie; Homestead Quarters; Government Pavilions and Villas; Victoria Hospital; Cenotaph Plots; Statue Square Plots; Government Offices; Defence Corps Headquarters; West End Park; Civil Hospital; Mental Hospital; Leighton Hill Quarters; Colonial Cemetery; Indian School; Royal Observatory; Central British School; Kowloon Magistracy; Kowloon Hospital; King's Park and Chatham Road.*

50. The total number of trees, shrubs and pot plants sold during the year was 1123 as against 2948 for 1937.

AGRICULTURE.

51. This side of the work of the department is necessarily of a restricted nature as there is no actual provision for such work the cost being borne by the forestry vote. However, such work as the department is able to do is carried out at the Sheung Shui experimental garden which is situated in the New Territories. The land is approximately 3 acres in extent and is in two levels. The area was obviously padi land at one time and most of the lower and smaller section is still retained for this purpose. The upper and larger section is under general cultivation and is used for such experimental work as the department is able to perform. Despite some years of cultivation the soil in this section is still very heavy from the generations of puddling for rice cultivation. It suffers from the disabilities of such soils, being heavy and inclined to become waterlogged in wet weather and quickly drying and forming a hard crust during sunny weather. From this it may be inferred that it is not an ideal soil for experimental purposes.

52. *Sheung Shui Experimental Garden*—General notes for the year are as follows: The oranges (Swatow) produced a very fine crop this year. The fruits were of large size and the majority of them of good flavour and they compared very favourably indeed with the imported fruit. In every respect they were far superior to the smaller local variety. The replacement of present propagation methods by grafting on local stocks, should make it a useful variety for the local population to take up as there is a good market in Hong Kong for the Swatow orange. The figs produced a heavy crop, but the flavour was somewhat insipid. This might be improved by attention to cultivation. Peaches were produced in abundance and it seems clear that the introduction of some good varieties for grafting purposes, with the local type as the stock, might produce good results. Bananas continued to produce good bunches and would seem to be a fruit worthy of extended cultivation if only from a nutrition point of view.

53. *Experimental Notes—Tung Oil (Aleurites montana)*—It was decided to try out this plant under open plantation conditions and as bushes rather than trees. For this purpose two separate areas have been planted up. Useful data, such as length of time required to produce fruit, etc., under Hong Kong conditions should be obtainable while certain other aspects of the crop will be studied. *Rice*—Small quantities of six varieties of rice were obtained from Sydney (Plant Breeding Station) for trial purposes. These have been raised by hybridisation and in some of the crosses local varieties have been used. Results from the first sowings have been generally good and it is hoped to build up supplies of seeds in sufficiently large quantities to enable comparative trials with local varieties to be carried out. *Sweet Potatoes*—Tubers of six selected varieties were obtained from the Malayan Agricultural Department, and are being grown experimentally with control plots of local varieties.

54. *Inspection of Plants and Plant Products for Export*—Certificates of inspection were issued during the year for the following:—*Vegetables* (fresh or dry) to Philippine Islands (66 consignments), *Sugar Cane* to Singapore (10 consign-

ments—75000 canes). *Narcissus Tazetta* L.—to Great Britain (1 consignment—320 bulbs), to India (3 consignments—4820 bulbs), to Honolulu (12 consignments 17,800 bulbs). Exports were affected by the Sino-Japanese hostilities and were appreciably less than in former years.

55. *Goats*—In order to maintain control in the matter of goat-keeping in relation to agriculture and afforestation generally, regulations under the Forestry Ordinance (Ordinance No. 11 of 1937) provide that no goats may be kept without the written consent of the Superintendent, Botanical & Forestry Department. In accordance with instructions received from H.E. The Governor, a goat census has been made with the following results:—Hong Kong 68, Kowloon 120, New Territories 260—Total 448. In addition, a stock of approximately 500 head is maintained at the Kennedy Town slaughter house, for the provision of meat for the goat-meat section of the local meat market.

SEED COLLECTION AND EXCHANGE.

56. *Seed Collection*—In connection with departmental requirements and requests for seed, collections were made in the forest areas of 53 species of trees and shrubs.

57. *Exchange*—The Department is indebted to the following donors of seeds, plants, etc.:—*Africa*: The Director, The Aburi Agricultural Station, Gold Coast; *Australia*: The Director, Department of Agriculture, N.S.W.; *British Guiana*: The Director, Department of Agriculture, Georgetown; *India*: The Curator, Royal Botanic Gardens, Calcutta; *Malaya*: The Director, Botanic Gardens, Singapore; Asst. Curator, Waterfall Garden, Penang; *New Zealand*: The Curator, Botanic Gardens, Christchurch; R. O. Dalrymple; *Brazil*: The Superintendent, The Jardim Botânico e Estacao, Rio de Janeiro; *China*: Professor Woon-young Chun, Canton; L. C. Li, Peiping; *West Indies*: Superintendent, Atkins Institution, Cuba; *Local*: Lady Northcote, Mr. Kwok Ping Lau.

58. The following were the principal recipients:—*Australia*: The Director of Plant Breeding, Department of Agriculture, Sydney; *British West Indies*: The Director of Agriculture, Jamaica; The Director of Agriculture, Trinidad; *Ceylon*: The Director, Tea Research Institute of Ceylon; *Egypt*: The Director, Horticultural Section, Ministry of Agriculture, Giza; *Great Britain*: Lord Aberconway, Bodnant; *India*: M.K. Sitaram Chetty; *New Guinea*: The Director, Department of Agriculture, Rabaul; *New Zealand*: R. O. Dalrymple, *Brazil*: The Superintendent, The Jardim Botânico e Estacao, Rio de Janeiro; The Director, Ministerio du Agricultura, Rio de Janeiro; *Indo-China*: The Director, Jardin Botanique, Saigon; *Philippine Islands*: The Director, Department of Agriculture and Commerce, Manila; *U.S.A.*: The Superintendent, Atkins Institution of the Arnold Arboretum, Cincuegos; P. H. Pozzi, California; *U.S.S.R.*: The Director, Department of Introduction and Naturalisation, Batum (Caucasus); *West Indies*: Superintendent, Atkins Institution, Cuba; *Local*: American Consul General, The Superior, St. Louis Industrial School, Mrs. G. de Martin, Mrs. G. Goddard, Messrs. H. S. Jones and Kwok Ping Lau.

REVENUE AND EXPENDITURE.

59. Statements of revenue and expenditure of the department are given in Tables II, III & IV. The reduction in timber sales is entirely due to the alteration in procedure regarding outturn. Previously, a timber contractor was employed and the terms of his contract included the extraction of timber and payment to Government at agreed rates for the timber so extracted. No timber contractor was employed during 1938, the timber being extracted by the department and passed direct to the Stores Department. The sum (\$843/42) appearing under this head was derived from small timber sales authorised by Government. It will be noted that figures under revenue include the estimated wholesale value of timber handed to the Stores Department. Figures for this were 2027.59 tons (avoirdupois) valued at approximately \$35,000. Factors affecting this outturn were (i) damage to forest areas by the typhoons of 1936 and 1937 and (ii) the higher value of firewood due to the disturbed local conditions.

STAFF.

60. The only change in the senior staff was the arrival of the Superintendent (Mr. F. Flippance) on transfer from Malaya. He assumed duty on 19. 1. 38. thus bringing to an end the period of staff changes which began on 27. 7. 37. with the departure on leave, prior to retirement, of Mr. H. Green. The latter retired on pension on 28. 4. 38.

F. FLIPPANCE,
Superintendent,
Botanical and Forestry Department.

14th April, 1939.

Table II.

COMPARATIVE STATEMENT OF REVENUE, 1937 & 1938.

Item.	1937.	1938.	Actual Forestry Revenue, 1938.
	\$	\$	\$
Timber Sales	2,492.70	843.42	843.42
Plant Sales	798.69	491.55	—
Loan of Plants	81.04	53.84	—
Forestry Licences	9,863.98	9,192.80 (a)	9,192.80 (a)
Sale of Condemned Stores	50.36	—	—
Overpayment in Previous Years	.63	1.30	—
Other Miscellaneous Receipts	829.08	810.63 (b)	—
Estimated Value of Timber Extracted for Government Supply	—	—	35,000.00
Total.....	14,116.48	11,393.54	45,036.22

(a) Collected by District Officers.

(b) Includes \$690 for inspection of nursery stock as against \$750 in 1937.

Table III.

COMPARATIVE STATEMENT OF EXPENDITURE AND REVENUE FOR THE PAST TEN YEARS.

Year.	Personal Emoluments and Other Charges.	Special Expenditure.	Total Expenditure.	Total Revenue.	Forestry Section.	
					Expenditure.	Revenue.
	\$	\$	\$	\$	\$	\$
1929.....	101,146.23	—	101,146.23	11,885.97	—	—
1930.....	120,565.39	3,809.67	124,375.06	12,376.46	—	—
1931.....	121,189.43	—	121,189.43	11,717.67	—	—
1932.....	122,041.57	—	122,041.57	17,028.99	—	—
1933.....	125,762.23	999.64	126,761.87	17,634.96	—	—
1934.....	127,403.14	—	127,403.14	14,084.02	—	—
1935.....	117,447.55	—	117,447.55	13,787.02	—	—
1936.....	125,355.53	—	125,355.53	13,748.67	—	—
1937.....	130,193.92	1,999.55	132,193.47	14,116.48	—	—
1938.....	136,442.75	2,635.32	139,078.07	11,393.54	77,762.36	45,036.22

Table IV.

BOTANICAL AND FORESTRY DEPARTMENT.

COMPARATIVE STATEMENT OF EXPENDITURE FOR 1937 AND 1938
AND APPROXIMATE EXPENDITURE ON FORESTRY SECTION FOR 1938.

Expenditure.	1937	1938	Approximate Expenditure on Forestry Section, 1938.
	\$	\$	\$
Personal Emoluments	87,116.24	92,315.24	47,226.43
<i>Other Charges.</i>			
Brushwood Clearing	6,493.90	6,775.95	6,775.95
Conveyance Allowances	2,122.64	2,466.06	1,806.06
Expenses of Collections	200.00	176.97	—
Field Allowances to Foresters	597.46	714.73	587.94
Forestry	15,016.83	17,088.54	17,088.54
Forestry Reserve, Taipo Kau	2,951.80	1,413.89	1,413.89
Incidental Expenses	389.59	393.51	—
Library	298.99	299.32	—
Light	337.51	363.16	—
Maintenance of Gardens	10,351.53	10,186.02	—
Protection of Plantations	830.82	1,189.00	1,189.00
Transport	1,522.03	1,394.20	939.25
Uniforms & Accoutrements	1,166.37	848.39	326.41
Upkeep of Car	798.21	817.77	408.89
Total Other Charges.	43,077.68	44,127.51	30,535.93
<i>Special Expenditure.</i>			
Planting Flowering Shrubs	1,999.55	1,904.60	—
Three New Mowing Machines	—	730.72	—
Total Special Expenditure	1,999.55	2,635.32	—
Total	132,193.47	139,078.07	77,762.36

Standard Form V (Modified).

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1938.

Territorial unit.	Cases taken to Court.				Bound over or otherwise dealt with.	Cautioned and Discharged.	Acquitted.	Total Depart- mental Cases.	Total Police Cases. Unclassi- fied.	Total all offences.
	Imprison- ment without option of fine.	Imprison- ment with option of fine.	Fines.							
			Cases.	Amount \$						
Hong Kong Island	37	296	19	302.11	19	7	5	383	1017	1400
New Territories	56	358	62	355.52	27	12	8	523	523	1046
Total.....	93	654	81	657.63	46	19	13	906	1540	2446

Standard Form VI.

STATEMENT IN ACRES OF PROGRESS IN CONCENTRATED REGENERATION AND AFFORESTATION DURING THE YEAR ENDED 31ST DECEMBER, 1938.

Territorial unit.	Regeneration of exploited forest.						Afforestation of land not hitherto under forest of value.			Cost of all operations including tending. (Local currency).				
	Area under regeneration.			Area of completed regeneration.			Area of plantations.							
	Type of regeneration.	On 1st Jan. 19	Added during year.	Transferred to column 8	On 31st Dec. 19	On 1st Jan. 19	Added during year.	Excluded during year.	On 31st Dec. 1938					
		3	4	5	6	7	8	9	10		11	12	13	14
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hong Kong Island										11520	127½	—	11647½	\$ 1302.66
New Territories										2560	110½	—	2670½	1240.67
										14080	238	—	14318	2543.33

Standard Form X.

IMPORTS AND EXPORTS OF TIMBER, WOOD PRODUCTS AND MINOR FOREST PRODUCE DURING THE YEAR ENDED 31ST DECEMBER, 1938.

Category.	Gross imports.		Gross exports.		Net imports or exports.		Average annual net imports or exports for quinquennium ended 31st Dec. 1938.		Percentage by value of gross imports or exports from or to different sources or destinations during the year 1938.	
	Hundreds of cu. ft.	Value in H.K. \$	Hundreds of cu. ft.	Value in H.K. \$	Hundreds of cu. ft.	Value in H.K. \$	Hundreds of cu. ft.	Value in H.K. \$	Imports from.	Exports to.
Hardwood	11,555	1,104,531	4,192	437,731	7,363	666,800	4,232	399,863	U.K. 1.1; Can. 0.9; Mal. 0.6; B.N.B. 38.0; Fr. Indo-China 0.2 N.E.I. 9.2.	N. China 72.4; M. China 1.1; S. China 8.0; Macao 18.5.
Teakwood	3,468	843,577	307	55,980	3,161	787,597	1,599	368,395	Fr. Indo-China 6.9; N.E.I. 2.6; Siam 90.5.	Can. 1.9; N. China 0.5; S. China 5.0; Kwong Chow Wan 0.1; Macao 92.5.
American Pine ...	4,277	506,085	671	81,332	3,606	424,753	5,027	418,441	Canada 30.7; U.S.A. 69.3.	N. China 75.6; M. China 0.1; S. China 8.6; Fr. Indo-China 1.1; Macao 14.2; N.E.I. 0.4.
China Fir	4,978	367,624	40	3,203	4,938	364,421	2,611	187,686	S. China 84.7; Macao 15.3.	Macao 100.0.
Softwood, n.o.e. ...	11,081	1,097,933	4,954	737,636	6,127	360,297	6,216	439,554	Can. 9.9; Mal. 9.2; B.N.B. 14.5; N. China 0.1; M. China 2.9; S. China 11.1; Macao 0.7; U.S.A. 51.6.	S. China 71.6; Macao 28.4.
Timber, n.o.e. (value only)	—	858,747	—	286,139	—	572,608	—	644,694	U.K. 1.0; Australia 1.3; Can. 1.7; Mal. 1.4; B.N.B. 21.5; B.E. Other 0.3; N. China 0.4; M. China 0.1; S. China 21.6; C. America 0.2; Fr. Indo-China 6.7; K.C. Wan 1.4; Macao 4.6; Siam 37.2; U.S.A. 0.6.	B.E.A. 0.1; Mal. 0.2; B.N.B. 0.2; Br. Emp. Other 0.2; N. China 30.1; S. China 15.7; Japan 1.5; K.C. Wan 1.1; Macao 50.7; Philippines 0.2.
Sleepers	43	7,351	1,291	227,750	1,248	220,399	560	33,770	Aust. 23.5; Siam 76.5.	S. China 83.5; Macao 16.5.
Total	35,402	4,785,848	11,455	1,829,771	26,443	3,396,875	20,245	2,492,403		
Firewood (Piculs)	2,549,533	2,427,952	—	—	2,549,533	2,427,952	2,462,844	1,857,376	Mal. 3.1; B.N.B. 18.5; M. China 1.0; S. China 52.0; Fr. Indo-China 0.1; K.C. Wan 0.3; Macao 25.0.	—
Grand Total (Value only)	—	7,213,800	—	1,829,771	—	5,824,827	—	4,349,779		

One dollar Hong Kong = 1s. 1/3d. ;

One picul = 133 lbs.

